

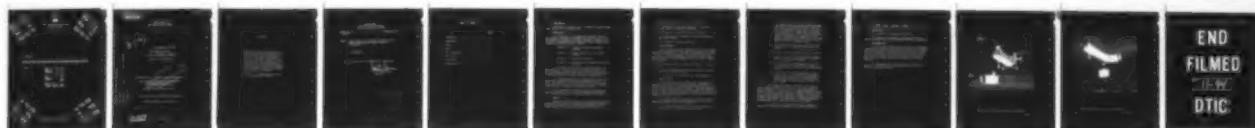
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OPERATIONAL EVALUATION OF THE AN/TSC-1 COMMUNICATIONS
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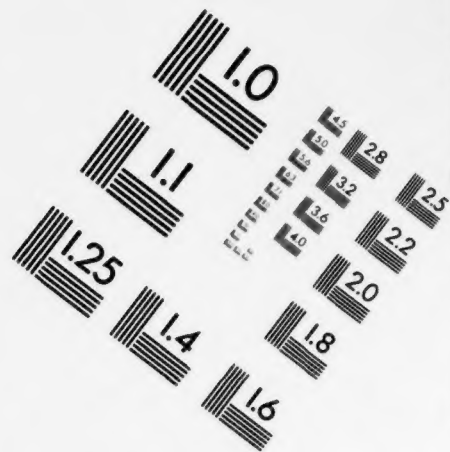
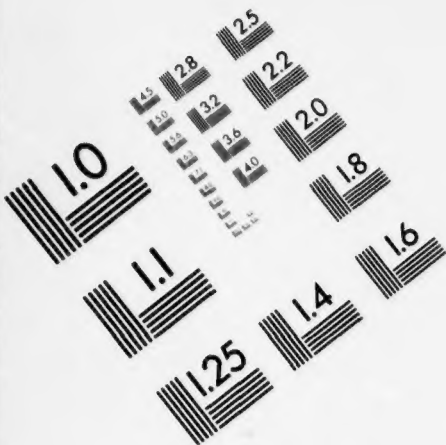




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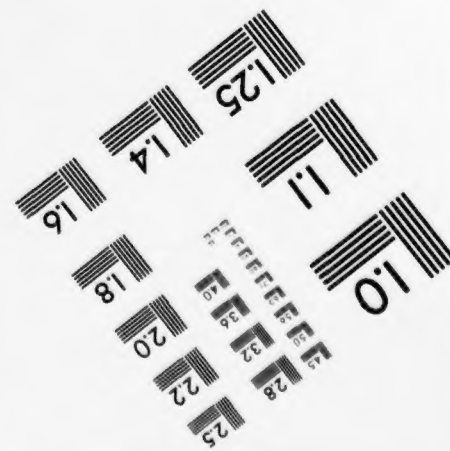
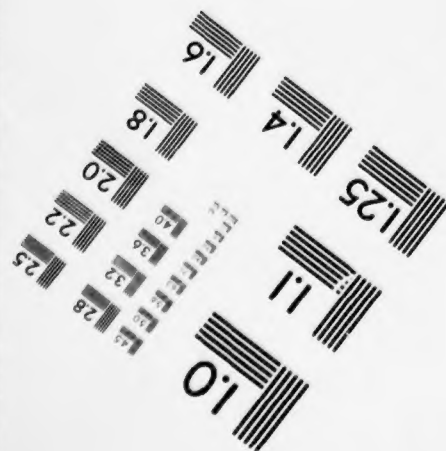
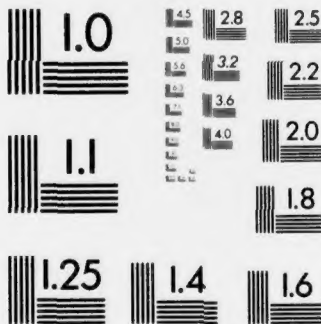
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Eglin Air Force Base, Florida



2 FINAL REPORT *TAB*

OPERATIONAL EVALUATION
OF THE *13 Feb 56*
AN/TSC-1 COMMUNICATIONS SYSTEM

PROJECT NO. APG/TAR/969-A

Project APG/TAR/969-A

AN/TSC-1

Shelters, communications equipment

"Helicop-Hut"

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ABSTRACT

The AN/TSC-1 Communications System is the designation applied to certain selected communications equipment when installed in 9 x 7 x 7 foot aluminum "Helicop-Huts." This test, completed 18 January 1956, at Langley Air Force Base, Virginia, was concerned primarily with the suitability of the shelter to be transported by helicopter such as the H-21B. No test of the communications equipment, standard within the Air Force inventory, was conducted.

The AN/TSC-1, as demonstrated during this test, is operationally suitable.

HEADQUARTERS
AIR PROVING GROUND COMMAND
Eglin Air Force Base, Florida

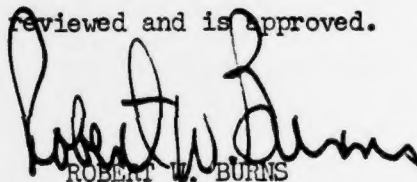
Office of the
Commander

13 February 1956

SUBJECT: Final Report on the Operational Evaluation of the
AN/TSC-1 Communications System, Project No.
APG/TAR/969-A

TO: All Recipients

The subject report has been reviewed and is approved.


ROBERT W. BURNS
Major General, USAF
Commander

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1. INTRODUCTION:

Authority for this Evaluation is contained in teletype message AFDRQ-TA/B 31496 dated 9 December 1955.

2. DESCRIPTION:

a. The AN/TSC-1 is the designation applied to certain Air Force standard communications equipments when installed in 9 x 7 x 7 foot reinforced aluminum "Helicop-Hut" shelters. A minimum of four differently equipped shelters may comprise an AN/TSC-1 installation at a forward or dispersed airstrip as follows:

Shelter No. 1: Telephone switchboard and carrier equipment.

Shelter No. 2: Teletype message center with crypto facility.

Shelter No. 3: VHF/FM Radio facility.

Shelter No. 4: Accessory hut containing masts, antennas and tools.

b. An AN/TSC-1 installation at a main base comprises one each shelters No. 1 and No. 2 and 2 each shelters No. 3 and No. 4, plus a maintenance shelter containing spare parts, test equipment, storage facilities and work bench. The main base facility is capable of providing sufficient circuitry to support two forward areas.

c. Huts and equipment vary in weight between 1140 and 2690 pounds and are designed for transport by helicopter sling or 6 x 6 truck. Three shelters at a time may be airlifted by C-119 aircraft. A detachable dolly, with retractable wheels, is available for final positioning after delivery to the operating location.

d. This equipment is scheduled for use by Communications-Operations Squadrons, Tactical Air Command, where extreme mobility, i.e., immediate movement into a front-line airstrip, is required.

3. OBJECT:

The object of this evaluation was to determine the suitability of the AN/TSC-1 as operated by a Communications-Operations Squadron, Tactical Air Command, and to determine the feasibility of using the H-21B helicopter as a vehicle for airlifting the equipment.

4. SCOPE: The following factors were investigated:

- a. Suitability of the H-21B helicopter as a vehicle for raising, transporting and lowering the shelters.
- b. Adequacy of working space within each shelter.
- c. Accessibility of communication control and adjustment points within each shelter.
- d. Suitability of detachable dollies.

5. DATA CONSIDERED:

- a. Shelters and equipment evaluated were located at Langley Air Force Base, Virginia, and were operated by personnel of the 405th Communications-Operations Squadron, 405th Fighter-Bomber Wing, Tactical Air Command. Although the evaluation was primarily concerned with those factors listed under paragraph 4 above, radio circuits were in operation between two points approximately one mile apart to simulate field conditions.
- b. Commercial power was obtained by connecting to a nearby power line.
- c. Pick up and delivery of a shelter weighing 2690 pounds was demonstrated by an H-21B helicopter.
- d. Operation of the detachable dolly was demonstrated.

6. DATA ANALYSIS:

- a. Investigation of the interior of each van showed that working space was somewhat limited, but adequate. Tactical Air Command's concept for use of the equipment prohibits little more than the bare minimum in terms of operator comfort. Unitized construction permits equipment subassemblies to be rolled forward from mounting racks for inspection and minor maintenance. Failures of a more serious nature are investigated in the maintenance shelter, equipped with test equipment, spare parts and tools.
- b. Although commercial power (110V AC) was used in lieu of portable power generators, standard equipment such as the PE-95 is available and suitable for use with the AN/TSC-1.
- c. The H-21B helicopter is suitable for airlifting any of the AN/TSC-1 shelters. Techniques used are as follows:

- (1) Two ground personnel are required to properly guide the hovering helicopter over the shelter and attach the sling to the four shelter cables. Each 5/16 inch 7 strand cable, 90 inches long, is attached to the four corners of the shelter and are joined at the opposite ends by a hook-up ring. As one airman directs the helicopter over the shelter by hand signals, a second airman standing on the roof of the shelter attaches the sling to the hook-up ring and jumps to the ground. (Figures 1 and 2.)
- (2) The helicopter then slowly rises vertically until the tension on the cables becomes apparent to the pilots.
- (3) The pilot applies full military power for take-off.
- (4) As soon as the shelter clears the ground, forward motion is started. Forward speed is accomplished with normal cruise power settings.
- (5) For off-loading, one airman directs the helicopter to the desired point. The H-21B pilot slowly descends vertically until slack in the cable becomes apparent.
- (6) The sling is automatically detached by a release switch located in the cockpit of the helicopter. Following the demonstration, a telephone headset, purposely left hanging on a cradle attached to a vertical panel of a transmitter, was found in the same position.

d. Two detachable dollies are available for use with the shelter and are attached to each long side. Each dolly mounts two wheels in tandem in a retracted position and are attached without raising the shelter from the ground. A worm gear, operable by one man, lowers the wheels and raises the shelter. The dolly is meant to be a final positioning device only, and is not designed for long distance movement of the shelter over rough terrain. During actual operations, the dolly will be used to tow the shelter to an operating site on a permanent airbase after airlift by C-119 or larger aircraft.

e. No internal air conditioning or heating equipment was installed in the shelters demonstrated. A screened air access is

located in a lower corner of the shelter, however, and an exhaust fan of 320 cubic feet per minute capacity is provided.

7. CONCLUSIONS:

- a. The AN/TSC-1 is operationally suitable.
- b. External air conditioning or heating equipment may be required when operating in areas experiencing extremes in temperature.

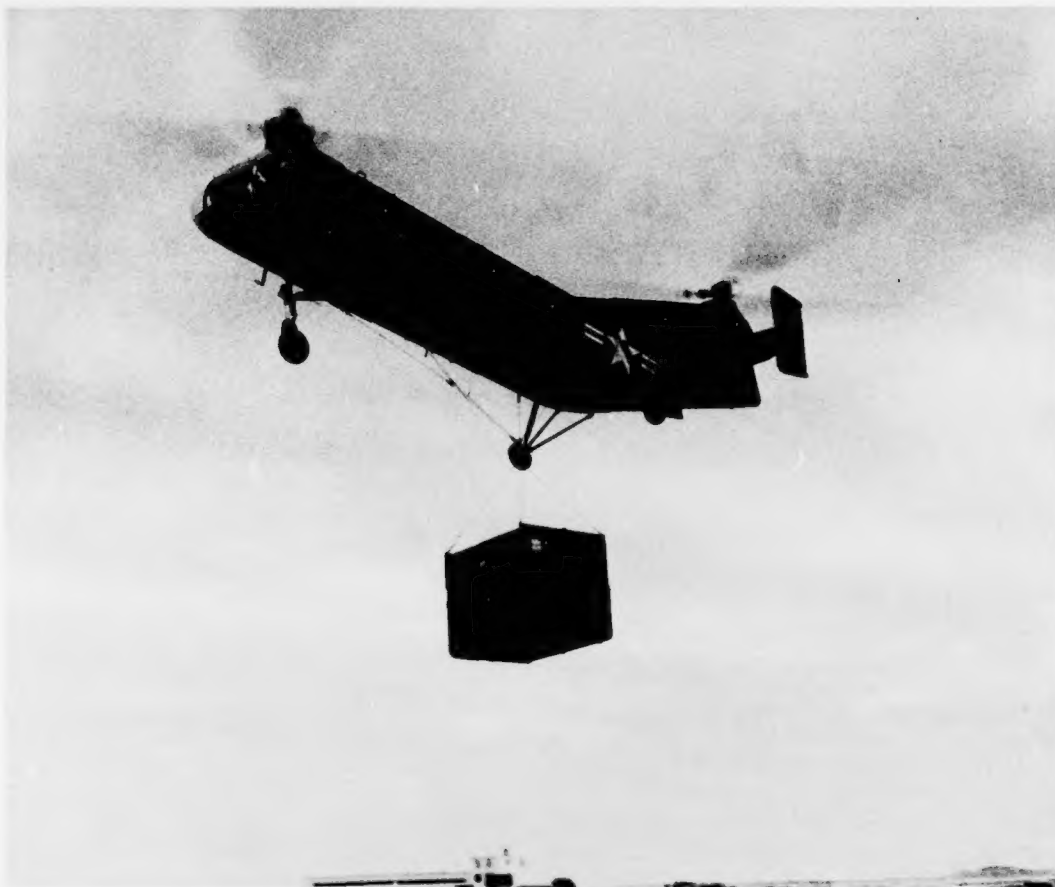
8. RECOMMENDATIONS:

a. That Air Research and Development Command, in conjunction with Tactical Air Command, conduct tests to determine optimum length of the cables attached to the four corners of the shelter. Although very little oscillation of the shelter was observed during two circuits of the field using the 90 inch cables furnished, it was the opinion of the helicopter pilots that a shorter cable would permit better control and "feel" during raising, flying, and lowering operations.

b. That access holes in the shelter be provided to accept standard air conditioning and heating equipment to be used when extremes in temperature prevail.



AN/TSC-1 Shelter, Langley AFB, Va., 18 January 1956



AN/TSC-1 Shelter, Langley AFB, Va., 18 January 1956

Figure 2

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